CLAIMS

1. A pharmaceutical composition for the antioxidant protection of cells, tissues and an organism as a whole from the hyperproduction of free radicals, said composition comprising an effective amount of at least one substance which enters into the group consisting of a peroxiredoxin polypeptide, a peroxiredoxin polypeptide fragment, dihydrolipoic acid, in combination with pharmaceutically acceptable additives in the following ratios, in weight percent:

i) a peroxiredoxin of from 10.0 to 90.0 and pharmaceutical additives the balance;

ii) a peroxiredoxin and dihydrolipoic acid, in total, of from 10.0 to 90.0 and pharmaceutical additives the balance, where the peroxiredoxin/dihydrolipoic acid ratio is from 1 to 50 (w/w);

iii) a peroxiredoxin fragment of from 10.0 to 90.0 and pharmaceutical additives the balance;

iv) a peroxiredoxin fragment and dihydrolipoic acid, in total, of from 10.0 to 90.0 and pharmaceutical additives the balance, where the peroxiredoxin/dihydrolipoic acid ratio is from 1 to 50 (w/w);

v) a peroxiredoxin of from 5.0 to 45.0 together with a peroxiredoxin fragment of from 5.0 to 45.0 and pharmaceutical additives the balance;

vi) a peroxiredoxin of from 5.0 to 45.0, a peroxiredoxin fragment of from5.0 to 45.0 and dihydrolipoic acid of from 1.0 to 50.0 in total to 90.0 and pharmaceutical additives the balance, where the ratio of the peroxiredoxin together with the peroxiredoxin fragment to the dihydrolipoic acid is from 1 to 50 (w/w).

2. A pharmaceutical composition according to claim 1, characterized in that peroxiredoxin is selected from the group consisting of: PrxI, PrxII, PrxIII, PrxIV, PrxV and PrxVI.

3. A pharmaceutical composition according to claim 1, characterized in that human peroxiredoxin PerVIhum is used.

4. A method of enhancing the antioxidant protection of mammals from pathology-inducing exogenous and/or endogenous factors, characterized in that the pharmaceutical composition according to claims 1—3 is contacted with the intercellular space of a tissue, organ or a whole organism of a mammal.

5. A method according to claim 4, characterized in that the composition is contacted with the intercellular space of a tissue, organ or an organism as a whole through the agency of a passive or active diffusion in application, spraying, or with the aid of parenteral or endolumbal administration with the aid of injections, or by parenteral administration with the

help of infusions, inhalations, introduction into a drainage, or by way of sublingual, vaginal, rectal introduction, or by the intermediary of drops into the nose or eyes.

6. A method according to claim 4, characterized in that additionally a therapeutic agent is used, which is employed preliminarily or simultaneously with or after using the peroxiredoxin-based composition.

7. A method according to claim 6, characterized in that the therapeutic agent is selected from the group consisting of: i) antibacterial, antivirus, antifungal, antihistaminic preparations, ii) high-molecular enzymes which provide additional protection against free radicals., iii) low-molecular compounds which provide additional lowering of the level of free radicals inside the cell, iv) preparations employed for the transplantation or cryopreservation of organs v) biologically active proteins, vi) hormones, vii) vitamins, viii) cytokins.

8. A method. for producing a polypeptide with antioxidant properties according to claim 1, which comprises selecting a nucleic acid molecule for producing a recombinant plasmid DNA, cultivating a line of cells transformed by a plasmid under conditions providing producing said polypeptide and/or its fragment, followed by isolating the polypeptide from the cell culture, characterized in that the nucleic acid molecule contains a sequence of natural humans protein of peroxiredoxin Prx VIhum (SEQ ID NO: 1) or a sequence of the N-terminal DNA fragment of peroxiredoxin ΔPrx V1hum (SEQ ID NO: 2) which codes for the polypeptide having a similar antioxidant activity, but has a smaller size and a higher penetrability in the intercellular space.

9. A nucleic acid molecule according to claim 8, encoding a protein having antioxidant properties, which is a DNA or an RNA and includes a nucleotide sequence corresponding to the amino acid sequence of natural human protein of peroxiredoxin Prx VI (SEQ ID NO: 1) having a length of 224 a.b. or an N-terminal DNA fragment of peroxiredoxin ΔPrx V1hum (SEQ ID NO: 2) having a length of 177 a.b. or an N-terminal DNA fragment of peroxiredoxin ΔPrx V1hum, whose length is selected within the range of from 178 a.b. to 224 a.b.

10. A recombinant plasmid DNA according to claim 8 for producing natural human protein of peroxiredoxin Prx VI or of ΔPrxV1hum peroxiredoxin fragment, comprising nucleotide sequences (SEQ ID NO: 1) or (SEQ ID NO: 2), functionally linked with regulatory sequences providing expression of said DNA in a compatible host cell.

11. A strain or a line of cells according to claim 8, transformed by a recombinant plasmid DNA, said strain or line of cells being a producer of a full-size recombinant peroxiredoxin Prx V1hum or of ΔPrxV1hum peroxiredoxin fragment.